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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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JAMES M. STOVER
NCR CORPORATION
1700 SOUTH PATTERSON BLVD, WHQ4
DAYTON, OH 45479

EXAMINER
MAHMOUDI, HASSAN

ART UNIT	PAPER NUMBER
2175	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/728,852	WATSON ET AL.
	Examiner	Art Unit
	Tony Mahmoudi	2175

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 January 2003</u> .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-9 and 11-31</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-9, and 11-31</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

   If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____ .

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

   a) ☐ The translation of the foreign language provisional application has been received.

   DOV POPOVICI

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and 121 SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Attachment(s)

1)☐ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)

3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> .   6)☐ Other:

DETAILED ACTION

Remarks

1. In response to communications filed on 21-January-2003, claim 10 is cancelled, claims 1-2,

6, 11-12, 14-16, and 18-19 are amended, and new claims 22-31 are added per applicant's

request. Therefore, claims 1-9, and 11-31 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3. Claims 1-3 and 6-9, and 11-31 are rejected under 35 U.S.C. 103(a) as being unpatentable

over <u>Reiner et al</u> (U.S. Patent No. 6,289,334) in view of <u>Nori et al</u> (U.S. Patent No.

6,061,690.)

As to claim 1, <u>Reiner et al</u> teaches a method (see Abstract), comprising:

receiving data to be stored in a database system (see column 2, lines 53-60, where

"receiving data" is read on "accessing data records stored in a database table") having plural

data servers (see column 30, lines 22-27, where "plural data servers" is read on "remote

clients and servers running on heterogeneous platforms", and see figure 2);

partitioning the data for storage in the database system based on the characteristic

associated with the data (see column 3, lines 32-46, and see column 11, lines 27-31); and

storing the partitioned data in storage units (see column 2, line 61 through column 3, line

3, and see column 3, lines 46-52) associated with the plural data servers (see column 2, lines

53-60, where "storage units associated with plural data servers" is read on "plural

independently accessible partitions [e.g. data partitions contained on separate disk drives])";

and

in response to a database query (see column 2, lines 63-65), selecting less than all the

plural data servers based on the positioning of the data to reduce a number of data servers

involved in processing the database query (see column 3, lines 32-52, and see column 25,

lines 39-48.)

Reiner et al does not teach:

Receiving information associated with at least one characteristic of the data.

Nori et al teaches a method for storage of object collections in a database system (see

Abstract), in which he teaches receiving information associated with at least one

characteristic of the data (see column 11, lines 25-37, where "information associated with

characteristics of the data" is read on "a set of parameters".)

Therefore, it would have been obvious to a person having ordinary skill in the art at the

time the invention was made to have modified Reiner et al to include receiving information

associated with at least one characteristic of the data.

It would have been obvious to a person having ordinary skill in the art at the time the

invention was made to have modified Reiner et al by the teaching of Nori et al, because

receiving information associated with at least one characteristic of the data, would enable the

user to receive relational information about the data and define the relationships between data

segments partitioned and stored in the plurality of storage devices.

As to claim 2, Reiner et al as modified teaches wherein receiving the information

comprises receiving the information from a client system (see Reiner et al, figures 11-13, and

see column 5, lines 25-27, and see column 30, lines 12-36.)

As to claim 3, Reiner et al as modified teaches wherein receiving the information

comprises receiving at least one of an average value of the data (see Reiner et al, column 9,

lines 57-61) a uniform distribution of the data (see Reiner et al, column 4, lines 37-42, where

"uniform distribution" is read on "distributed roughly evenly"), a minimum value of the data

(see Reiner et al, column 9, lines 50-56), and a maximum value of the data (see Reiner et al,

column 16, lines 43-48.)

As to claim 6, Reiner et al as modified teaches wherein partitioning the data for storage in

the database system comprises dividing the data into buckets containing related data (see

Reiner et al, column 26, lines 19-22, where "dividing the data into buckets" is read on "one

or more files to which the query's reads will be restricted".)

As to claim 7, <u>Reiner et al</u> as modified teaches wherein partitioning the data comprises organizing the data into related portions (see <u>Reiner et al</u>, column 10, lines 62-67, and see column 27, lines 53-64.)

As to claim 8, <u>Reiner et al</u> as modified teaches wherein partitioning the data further comprises executing an algorithm to organize the data (see <u>Reiner et al</u>, column 10, line 62 through column 11, lines 26, where "executing an algorithm" s read on "combining DBMS's indexing and hashing mechanisms".)

As to claim 9, <u>Reiner et al</u> as modified teaches wherein storing the partitioned data in the database system comprises storing the partitioned data in a relational database system (see <u>Reiner et al</u>, column 7, lines 43-48.)

As to claim 11, <u>Reiner et al</u> teaches a system (see Abstract), comprising:

a database (see figure 3A);

a network interface (see figure 2, and see column 2, line 61 through column 3, line 3);

plural storage modules and data servers (see column 30, lines 22-27, where "plural storage modules and data servers" is read on "remote clients and servers running on heterogeneous platforms");

a database controller coupled to the database (see column 5, lines 37-42), wherein the database controller is adapted to perform a partitioning task on data received through the

network interface based on the partitioning information (see column 24, lines 8-36) to

partition the data into plural groups (see column 25, lines 39-40),

the database controller adapted to further store the plural groups of the data partitioned by

the partitioning task (see column 145, lines 2-5) into the plural storage modules associated

with corresponding plural data servers (see column 7, lines 43-48),

the database controller adapted to select, in response to a database query (see column 2,

lines 63-65), less than all the plural data servers based on the partitioning information to

reduce a number of data servers involved in processing the database query (see column 3,

lines 32-52, and see column 25, lines 39-48.)

Reiner et al does not teach receiving partitioning information.

Nori et al teaches a method for storage of object collections in a database system (see

Abstract), in which he teaches receiving partitioning information (see column 11, lines 25-

37, where "information" is read on "a set of parameters", and see column 17, lines 33-48.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the

time the invention was made to have modified Reiner et al to include receiving partitioning

information.

It would have been obvious to a person having ordinary skill in the art at the time the

invention was made to have modified Reiner et al by the teaching of Nori et al, because

receiving partitioning information, would enable the system to define the size, level, and

structure of the data partitions within a relational database, based on the information received

on the actual data contents to be stored in the appropriate partition.

As to claim 12, Reiner et al as modified teaches wherein the database is part of a parallel database system (see Reiner et al, column 8, lines 46-51, see figure 3B, and see column 145, lines 2-5, and see figure .)

As to claim 13, Reiner et al as modified teaches wherein the database is a relational database (see Reiner et al, column 7, lines 43-48.)

As to claim 14, Reiner et al as modified teaches wherein the database controller comprises:

a query coordinator coupled to the network interface, the query coordinator to receive the database query from the network interface (see Reiner et al, column 145, lines 2-27);

a partitioner to partition data and perform selecting of less than all the plural data servers (see Reiner et al, column 3, lines 32-52, and see column 25, lines 39-48; and

a partitioner data storage coupled to the partitioner, the partitioner data storage to store the partitioning information (see Nori et al, column 11, lines 25-37, where "information" is read on "a set of parameters", and see column 17, lines 33-48, also see Reiner et al, column 2, line 61 through column 3, line 3, and see column 3, lines 46-52) associated with at least one characteristic of the data (see Nori et al, column 11, lines 25-37, where "information associated with characteristics of the data" is read on "a set of parameters") to enable the partitioner to partition data (see Reiner et al, column 24, lines 8-36.)

As to claim 15, Reiner et al as modified teaches wherein the partitioner is capable of executing an algorithm, based on the stored partitioning information (see Nori et al, column 11, lines 25-37, where "information" is read on "a set of parameters"), for partitioning the data (see Reiner et al, column 10, line 62 through column 11, lines 26, where "executing an algorithm" s read on "combining DBMS's indexing and hashing mechanisms".)

As to claim 16, Reiner et al as modified teaches wherein the plural data servers (see Reiner et al, column 30, lines 22-27, where "plural storage modules and data servers" is read on "remote clients and servers running on heterogeneous platforms") are adapted to store and access partitioned data in the database (see Reiner et al, column 5, lines 56-65, and see column 7, lines 43-48.)

As to claim 17, Reiner et al as modified teaches the system further comprising a client system, wherein the client system sends data to the database through the network interface (see Reiner et al, column 31, lines 47-52.)

As to claim 18, Reiner et al as modified teaches wherein the client system is adapted to further send the partitioning information to be used by the database controller to partition the data (see Nori et al, column 11, lines 25-37, where "characteristic of the data" is read on "a set of parameters", and see column 17, lines 33-48.)

As to claim 19, <u>Reiner et al</u> teaches an article comprising one or more storage media (see column 3, lines 45-49) containing instructions (see column 6, lines 32-35) that when executed cause a device to:

receive information to be stored into a database system from a remote device (see column 2, lines 53-60, where "receiving information" is read on "accessing data records stored in a database table") ;

partition the data for storage in the database system based on the characteristic of the data (see column 3, lines 32-46, and see column 11, lines 27-31);

store the partitioned data in the database system (see column 2, line 61 through column 3, line 3, and see column 3, lines 46-52) in plural storage modules associated with plural data servers (see column 7, lines 43-48); and

in response to a database query (see column 2, lines 63-65), select less than all the data servers based on the information to reduce a number of data servers involved in processing the database query (see column 3, lines 32-52, and see column 25, lines 39-48.)

<u>Reiner et al</u> does not teach:

receiving information associated with at least one characteristic of the data.

<u>Nori et al</u> teaches a method for storage of object collections in a database system (see Abstract), in which he teaches receiving information associated with at least one characteristic of the data (see column 11, lines 25-37, where "information associated with characteristics of the data" is read on "a set of parameters".)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified <u>Reiner et al</u> to include receiving information associated with at least one characteristic of the data.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified <u>Reiner et al</u> by the teaching of <u>Nori et al</u>, because receiving information associated with at least one characteristic of the data, would enable the user to receive relational information about the data and define the relationships between data segments partitioned and stored in the plurality of storage devices.

As to claim 20, <u>Reiner et al</u> as modified teaches wherein the instructions when executed cause the device to execute an algorithm to partition the data (see <u>Reiner et al</u>, column 10, line 62 through column 11, lines 26, where "executing an algorithm" s read on "combining DBMS's indexing and hashing mechanisms".)

As to claim 21, <u>Reiner et al</u> as modified teaches wherein the instructions when executed cause the device to divide the data into segments containing related data (see <u>Reiner et al</u>, column 26, lines 19-22, where "dividing the data into segments" is read on "one or more files to which the query's reads will be restricted".)

As to claim 22, <u>Reiner et al</u> as modified teaches wherein receiving the information comprises receiving organizational information (see <u>Reiner et al</u>, column 34, lines 43-57' where "organizational information" is read on "strategic information" which must be

"analyzed to organize it into a structured form"), and wherein selecting less than all the plural

data servers is based on the organizational information (see <u>Reiner et al</u>, column 19, lines 3-

6, where "selecting at least one more data server" is read on "target list modification".)

As to claim 23, <u>Reiner et al</u> as modified teaches wherein selecting less than all the plural

data servers (see <u>Reiner et al</u>, column 19, lines 3-6, where "selecting at least one more data

server" is read on "target list modification") is based on the organizational information (see

<u>Reiner et al</u>, column 34, lines 43-57' where "organizational information" is read on "strategic

information" which must be "analyzed to organize it into a structured form") and a

characteristic of data requested by the database query (see <u>Nori et al</u>, column 11, lines 25-

37.)

As to claim 24, <u>Reiner et al</u> as modified teaches the method further comprising:

retrieving search results obtained by the selected data servers (see <u>Reiner et al</u>, column

13, lines 7-8, where "retrieving search results" is read on "each subquery retrieves its

results");

determining whether the search results are satisfactory (see <u>Reiner et al</u>, column 16, lines

43-48, and see column 18, line 63 through column 19, line 2, where "satisfactory" is read on

"correctly"); and

selecting at least one more data server to process the database query if the search results

are not satisfactory (see <u>Reiner et al</u>, column 19, lines 3-6, where "selecting at least one more

data server" is read on "target list modification".)

As to claim 25, <u>Reiner et al</u> as modified teaches wherein partitioning the data comprises partitioning the data into logical groups (see <u>Reiner et al</u>, column 3, lines 10-17.)

As to claim 26, <u>Reiner et al</u> as modified teaches the method further comprising storing the information by a partitioner (see <u>Reiner et al</u>, column 2, line 61 through column 3, line 3), wherein selecting less than all the data select is performed at least in part by the partitioner (see <u>Reiner et al</u>, column 3, lines 32-52, and see column 25, lines 39-48.)

As to claim 27, <u>Reiner et al</u> as modified teaches the database controller to select less than all the plural data servers based on the partitioning information (see <u>Reiner et al</u>, column 3, lines 32-52, and see column 25, lines 39-48) and a characteristic of data requested by the database query (see <u>Nori et al</u>, column 11, lines 25-37.)

As to claim 28, <u>Reiner et al</u> as modified teaches wherein the selected data servers are adapted to retrieve search results in response to the database query (see <u>Reiner et al</u>, column 13, lines 7-8, where "retrieving search results" is read on "each subquery retrieves its results"), and the database controller is adapted to determine whether the search results are satisfactory (see <u>Reiner et al</u>, column 16, lines 43-48, and see column 18, line 63 through column 19, line 2, where "satisfactory" is read on "correctly") and to select at least one more data server to process the database query if the search results are not satisfactory (see <u>Reiner</u>

et al, column 19, lines 3-6, where "selecting at least one more data server" is read on "target

list modification".)

As to claim 29, Reiner et al as modified teaches wherein the instructions when executed

(see Reiner et al, column 6, lines 32-35) cause the device to receive information comprising

partitioning information (see Nori et al, column 17, lines 33-48.)

As to claim 30, Reiner et al as modified teaches wherein the instructions when executed

(see Reiner et al, column 6, lines 32-35) cause the device to select less than all the plural data

servers (see Reiner et al, column 3, lines 32-52, and see column 25, lines 39-48) based on the

partitioning information (see Nori et al, column 17, lines 33-48) and a characteristic of data

requested by the database query (see Nori et al, column 11, lines 25-37.)

As to claim 31, Reiner et el as modified teaches wherein the instructions when executed

(see Reiner et al, column 6, lines 32-35) cause the device to:

retrieve search results obtained by the selected data servers (see Reiner et al, column 13,

lines 7-8, where "retrieving search results" is read on "each subquery retrieves its results");

determine whether the search results are satisfactory (see Reiner et al, column 16, lines

43-48, and see column 18, line 63 through column 19, line 2, where "satisfactory" is read on

"correctly"); and

select at least one more data server to process the database query if the search results are

not satisfactory (see <u>Reiner et al</u>, column 19, lines 3-6, where "selecting at least one more

data server" is read on "target list modification".)

4. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Reiner et al</u> (U.S.

Patent No. 6,289,334) in view of <u>Nori et al</u> (U.S. Patent No. 6,061,690) as applied to claims

1-3, 6-9, and 11-31 above, and further in view of <u>Natarajan</u> (U.S. Patent No. 5,400,371.)

As to claim 4, <u>Reiner et al</u> as modified teaches partitioning the data (see <u>Reiner et al</u>,

column 3, lines 32-46, and see column 11, lines 27-31.)

<u>Reiner et al</u>, as modified does not teach defining straight-line segments based on at least

one of the average value of the data, the uniform distribution of the data, the minimum value

of the data, and the maximum value of the data.

<u>Natarajan</u> teaches a system and method for filtering random noise using data compression

(see Abstract), in which he teaches defining straight-line segments (see figure 1, and see

column 6, lines 35-46) based on at least one of the average value of the data (see column 12,

lines 8-14), the uniform distribution of the data, the minimum value of the data, and the

maximum value of the data (see column 5, lines 36-46, and see lines 63-68.)

Therefore, it would have been obvious to a person having ordinary skill in the art to have

modified <u>Reiner et al</u> as modified to include defining straight-line segments based on at least

one of the average value of the data, the uniform distribution of the data, the minimum value

of the data, and the maximum value of the data.

It would have been possible to a person having ordinary skill in the art at the time the invention was made to have modified Reiner et al as modified, by the teaching of Natarajan, because defining straight-line segments based on at least one of the average value of the data, the uniform distribution of the data, the minimum value of the data, and the maximum value of the data, would enable the system to linearly approximate the value of the non-linear data based on where the majority of the calculated data points are positioned.

As to claim 5, Reiner et al as modified teaches wherein partitioning the data (see Reiner et al, column 3, lines 32-46, and see column 11, lines 27-31) further comprises defining breakpoints to provide the straight-line segments (see Natarajan, column 3, lines 33-51, and see column 11, lines 10-16.)

Response to Arguments

5. Applicant's arguments filed on 21-January-2003 with respect to cited references have been fully considered but they not found to be persuasive:

In response to applicant's arguments that "it is improper to combine Reiner et al and Nori et al, as there is no suggestion and motivation to combine the references", the arguments have been fully considered but are not found to be persuasive, because the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both cited references teach inventions that are in the same field of endeavor.

In response to applicant's arguments that the cited references "do not teach or suggest the elements recited in each of the independent claims", and particularly in response to applicant's arguments that neither reference "mentions selection of less than all plural data servers based on partitioning of data to reduce a number of data servers involved in processing a database query"; and that "there is no teaching or suggestion in the asserted combination of Reiner et al, and Nori et al of a database controller to receive portioning information, to perform a partitioning task based on the partitioning information to partition the data into plural groups", the arguments have been fully considered but are not found to be persuasive. Applicant is kindly directed to the remarks and discussions made in the amended independent claims 1, 11, and 19 above.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Tony Mahmoudi whose telephone number is (703) 305-4887. The examiner can normally be reached on Mondays-Fridays from 08:00 am to 04:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici, can be reached at (703) 305-3830.

tm

March 27, 2003

DOV POPOVICI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100